

U. S. Department of Agriculture - Forest Service
CENTRAL STATES FOREST EXPERIMENT STATION
Columbus, Ohio

Table of STANDARD BOLT CUTS
Showing the Number and Diameter by Size Classes

L. F. Kellogg 1934 Standard Bolts = 4.15 Ft.
Stump Height = 0.5 Ft.

D.B.H. of Tree	Total Ht.	Diam. of Bolts i.b. at small end - inches					Total No. of Bolts	Volume of Bolts		
		5	6	7	8	9		International	Rule 1/8" kerf	Scribner
		No. of 4.15-ft. Bolts								
Inches	Ft.						No.	Bd. Ft.	Bd. Ft.	
7	30	1					1	2		2
	40	2					2	5		4
	50	2					2	5		4
	60	3					3	8		6
	70	4					4	10		8
8	30	1	1				2	8		6
	40	2	1				3	10		8
	50	2	2				4	15		12
	60	3	2				5	18		14
	70	3	3				6	22		18
9	40	2	1	1			4	18		14
	50	2	1	2			5	25		20
	60	2	2	2			6	30		24
	70	3	3	2			8	38		30
	80	3	4	2			9	42		34
10	40	1	1	1	1		4	25		20
	50	2	1	2	1		6	35		28
	60	2	2	2	1		7	40		32
	70	2	3	3	1		9	52		42
	80	3	3	3	2		11	65		52
11	40	1	1	1	1		4	35		28
	50	1	1	2	1	1	6	45		36
	60	1	2	2	2	1	8	60		48
	70	2	2	3	2	1	10	70		56
	80	2	2	3	3	1	11	80		64
	90	2	3	3	4	1	13	95		76

(over)

D.B.H. of Tree	Total Ht.	Diam. of Bolts i.b. at small end - inches										Total No. of Bolts	Volume of Bolts			
		5	6	7	8	9	10	11	12	13	14	15	16	Intern'l Rule 1/8"	Scribner Rule kerf	
		No. of 4.15-ft. Bolts														
Inches	Ft.													No.	Bd. Ft.	Bd. Ft.
12	40	1	1	1	1	1								5	42	36
	50	1	2	1	1	1								7	58	48
	60	2	1	2	2	1	1							9	72	60
	70	1	2	2	2	2	1							10	88	72
	80	1	3	2	2	3	1							12	105	86
	90	2	2	3	3	3	3	1						14	120	98
13	60	1	2	1	1	2	2							9	85	71
	70	1	2	2	2	2	2							11	102	85
	80	2	2	2	2	2	2	3						13	120	100
	90	1	2	2	3	3	3	3						14	140	116
14	60	1	1	1	2	1	1	2						9	102	84
	70	1	1	2	1	2	2	2						11	128	106
	80	1	2	1	2	2	3	2						13	150	126
	90	1	2	2	2	3	2	3						15	175	144
15	60	1	1	2	1	1	1	2	1					10	125	102
	70	1	2	1	1	2	2	1	2					12	155	126
	80	2	1	1	2	2	2	2	2					14	182	149
16	60	1	1	1	1	1	1	2	1	1				10	148	120
	70	1	1	1	2	1	2	1	2	1				12	178	144
	80	1	1	2	1	2	2	2	1	2				14	212	174
17	60	1	1	1	1	1	1	1	1	1	1			10	162	132
	70	1	1	1	1	1	2	1	1	2	1			12	208	170
	80	1	1	1	1	2	2	1	2	2	1			14	245	199
18	60	1	1	1	1	1	1	1	1	1	1			10	198	164
	70	1	1	1	1	2	1	1	1	2	1	1		12	242	200
	80	1	2	1	1	2	1	2	1	2	1	1		14	282	233
19	70	1	1	1	1	1	1	1	2	1	1	1		13	275	226
	80	1	1	1	1	1	2	1	2	1	2	1		15	325	268

Black locust is cut in bolt form for manufacture into insulator pins of several types, wagon hubs, wheel spokes, and treenails for wooden ships. As a rule locust bolts are cut at least 4 feet 2 inches and not over 8 feet 4 inches long, but very good bolts 3 feet or 10 feet long will often be accepted by manufacturers.

Bolts from large trees are preferred. Dealers figure 400 board feet to the cord for black locust bolts.

Manufacturers just about "break even" on bolts of 5"-7" diameter, and begin to make a profit when they are 8" and over in diameter. For wagon hubs, bolts of 9" and over are required.

Those who desire to know more about the stumpage, costs, and utilization of black locust in bolt form are referred to:

Cuno, J. B.

1930 - Utilization of black locust.
U. S. Dept. of Agri. Circular No. 131.
20 pp. illus. specifications. appendix.
Govt. Print. Off. Wash. D. C.

The foregoing table was constructed from average taper curves prepared by the F. S. Baker method of subordinate form quotients, and based on 396 stem measurements taken in Indiana, Illinois, and Ohio. The averages were made on heights at percentile diameters rather than on diameters at given heights. From the final taper curves, standard bolts 4.15 feet in length above a 0.5 foot stump were scaled. Fractional inches of small diameters were rounded off to the next lower inch class for conservatism. Curves of number of bolts over D.B.H. by height classes, and then over height by D.B.H. classes were prepared to check inconsistencies. Bolts have been rounded off to the nearest whole bolt rather than to carry fractional values which cannot be utilized.

No opportunity has come to check this table against actual bolt-cutting operations. Anyone having such an opportunity can give material service by comparing tabular values with those secured by careful utilization in trees of the same D.B.H.-height classes. This Station will appreciate such checks and criticism of this table.

This is the sixth of several tables for plantation black locust.